

**EXH. CLS-7
DOCKET UE-191037
COLSTRIP UNIT 4 SALE
WITNESS: CINDY L. SONG**

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

In the Matter of the Application of

PUGET SOUND ENERGY

**For an Order Authorizing the Sale of
All of Puget Sound Energy's Interests
in Colstrip Unit 4 and Certain of Puget
Sound Energy's Interests in the
Colstrip Transmission System**

Docket UE-191037

**SIXTH EXHIBIT (NONCONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF**

CINDY L. SONG

ON BEHALF OF PUGET SOUND ENERGY

FEBRUARY 19, 2020

**PSE Quantitative Analysis Comparing "Business as Usual" Scenario and the "Proposed Sale" Scenario
(October 21, 2019)**

	(A)	(B)	(C)
		Scenario 1	Scenario 2
		No hedging	Hedge 95MW
Line			
1	Cost (\$ in millions)		
2	Colstrip unit 4 continuing operations	\$168 M	\$168 M
3	90MW 5-year PPA + 95MW replacement	\$122 M	\$143 M
4	PPA Savings NPV	\$46 M	\$25 M
5			
6	Cost (\$/MWh)		
7	Colstrip unit 4 continuing operations	\$43.1/MWh	\$43.1/MWh
8	90MW 5-year PPA + 95MW replacement	\$31.3/MWh	\$36.6/MWh
9	Proposed Sale Benefit (\$/MWh)	\$11.8/MWh	\$6.5/MWh

**PSE Quantitative Analysis Comparing "Business as Usual" Scenario and the "Proposed Sale" Scenario
Five-Year Comparison**

Line	(A)	(B)	(C)	(D)	(E)	(F)	(G)	12-month ending						
								May 2021	May 2022	May 2023	May 2024	May 2025		
Scenario 1 - no hedging														
1		Present Value												
2		Colstrip unit 4 continuing operations	\$168 M	\$43 M	\$39 M	\$36 M	\$41 M	\$46 M						
3		90MW 5-year PPA + 95MW replacement	\$122 M	\$31 M	\$29 M	\$28 M	\$29 M	\$31 M						
4		Proposed Sale Benefit	\$46 M	\$12 M	\$10 M	\$8 M	\$12 M	\$15 M						
5														
6		Cost (\$/MWh)	Average											
7		Colstrip unit 4 continuing operations	\$43.1/MWh	\$43.2/MWh	\$41.2/MWh	\$38.3/MWh	\$44.0/MWh	\$48.9/MWh						
8		90MW 5-year PPA + 95MW replacement	\$31.3/MWh	\$31.3/MWh	\$30.8/MWh	\$30.0/MWh	\$31.3/MWh	\$33.3/MWh						
9		Proposed Sale Benefit (\$/MWh)	\$11.8/MWh	\$11.9/MWh	\$10.4/MWh	\$8.3/MWh	\$12.6/MWh	\$15.7/MWh						
10														
Scenario 2 - hedge 95MW														
11														
12														
13														
Scenario 2 - hedge 95MW														
14		Present Value												
15		Colstrip unit 4 continuing operations	\$168 M	\$43 M	\$39 M	\$36 M	\$41 M	\$46 M						
16		90MW 5-year PPA + 95MW replacement	\$143 M	\$36 M	\$34 M	\$34 M	\$34 M	\$35 M						
17		Proposed Sale Benefit	\$25 M	\$7 M	\$5 M	\$2 M	\$7 M	\$11 M						
18														
19		Cost (\$/MWh)	Average											
20		Colstrip unit 4 continuing operations	\$43.1/MWh	\$43.2/MWh	\$41.2/MWh	\$38.3/MWh	\$44.0/MWh	\$48.9/MWh						
21		90MW 5-year PPA + 95MW replacement	\$36.6/MWh	\$36.3/MWh	\$36.1/MWh	\$36.4/MWh	\$36.7/MWh	\$37.5/MWh						
22		Proposed Sale Benefit (\$/MWh)	\$6.5/MWh	\$6.9/MWh	\$5.1/MWh	\$1.9/MWh	\$7.3/MWh	\$11.4/MWh						

Colstrip Unit 4 - Continuing Operations

Line	\$ in millions	12-month ending				5-year Average
		May 2021	May 2022	May 2023	May 2024	
1	PSE's share of unit 4 capacity	185 MW	185 MW	185 MW	185 MW	185 MW
2	PSE's take (MWh)	994,256	947,548	939,818	932,400	940,072
3	Net capacity factor	61%	58%	58%	58%	59%
4						
5	Colstrip unit 4 operating cost					
6	Fixed operating expenses	\$14 M	\$13 M	\$12 M	\$14 M	\$14 M
7	Capital	\$6 M	\$4 M	\$1 M	\$4 M	\$4 M
8	Dispatch cost	\$21 M	\$20 M	\$20 M	\$20 M	\$20 M
9	Colstrip unit 4 operating cost	\$40 M	\$36 M	\$33 M	\$38 M	\$38 M
10						
11	PSE Expense					
12	Property Tax	\$3 M	\$3 M	\$3 M	\$3 M	\$3 M
13	Total PSE Expense	\$3 M	\$3 M	\$3 M	\$3 M	\$3 M
14						
15	Total cost (line 10 + 14)	\$43 M	\$39 M	\$36 M	\$41 M	\$41 M
16						
17	Dispatch cost (line 9 / 2)	\$20.7/MWh	\$21.2/MWh	\$21.0/MWh	\$21.2/MWh	\$21.5/MWh
18	Cost \$/MWh (line 16 / 2)	\$43.2/MWh	\$41.2/MWh	\$38.3/MWh	\$44.0/MWh	\$43.1/MWh
19						
20	Total cost NPV (line 16)	\$168 M				
21	Cost \$/MWh (5-year average)	\$43.1/MWh				

Scenario 1 - No Hedging

Line	<i>\$ in millions</i>	12-month ending			
		May 2021	May 2022	May 2023	May 2024
1	90 MW NWE PPA				
2	NWE PPA capacity	90 MW	90 MW	90 MW	90 MW
3					
4	Energy (MWh)	483,692	460,969	457,209	457,332
5	Market price (\$/MWh)	\$26.7/MWh	\$26.5/MWh	\$25.6/MWh	\$26.4/MWh
6	Subtotal PPA cost	\$13 M	\$12 M	\$12 M	\$13 M
7	O&M Adder	\$3 M	\$3 M	\$3 M	\$3 M
8	Total PPA	\$16 M	\$15 M	\$15 M	\$16 M
9					
10	95 MW Replacement				
11	Energy replacement				
12	Replacement energy (MWh)	510,564	486,579	482,609	478,800
13	Mid-C price (\$/MWh)	\$26.7/MWh	\$26.5/MWh	\$25.6/MWh	\$26.4/MWh
14	Energy replacement	\$14 M	\$13 M	\$12 M	\$13 M
15					
16	Replacement capacity winter only				
17	Capacity (MW)	95 MW	95 MW	95 MW	95 MW
18	Capacity charge	\$12.0/kw-yr	\$12.3/kw-yr	\$12.6/kw-yr	\$12.9/kw-yr
19	Capacity replacement cost	\$1 M	\$1 M	\$1 M	\$1 M
20					
21	Total cost (line 8+14+19)	\$31 M	\$29 M	\$28 M	\$29 M
22					
23	Total capacity	185 MW	185 MW	185 MW	185 MW
24	Total energy MWh	994,256	947,548	939,818	932,400
25	Cost \$/MWh (line 21 / 24)	\$31.3/MWh	\$30.8/MWh	\$30.0/MWh	\$31.3/MWh
26					
27	Total cost NPV (line 21)	\$122 M			
28	Cost \$/MWh (5-year average)	\$31.3/MWh			

Scenario 2 - Hedge 95 MW

Line	\$ in millions	12-month ending				
		May 2021	May 2022	May 2023	May 2024	May 2025
1	90 MW NWE PPA					
2	NWE PPA capacity	90 MW	90 MW	90 MW	90 MW	90 MW
3						
4	Energy (MWh)	483,692	460,969	457,209	453,600	457,332
5	Market price (\$/MWh)	\$26.7/MWh	\$26.5/MWh	\$25.6/MWh	\$26.4/MWh	\$28.1/MWh
6	Subtotal PPA cost	\$13 M	\$12 M	\$12 M	\$12 M	\$13 M
7	O&M Adder	\$3 M	\$3 M	\$3 M	\$3 M	\$3 M
8	Total PPA	\$16 M	\$15 M	\$15 M	\$15 M	\$16 M
9						
10	95 MW Replacement					
11	Energy replacement					
12	Replacement energy (MWh)	510,564	486,579	482,609	478,800	482,739
13	Mid-C price (\$/MWh)	\$37.5/MWh	\$37.5/MWh	\$37.5/MWh	\$37.5/MWh	\$37.5/MWh
14	Energy replacement	\$19 M	\$18 M	\$18 M	\$18 M	\$18 M
15						
16	Replacement capacity winter only					
17	Capacity (MW)	95 MW	95 MW	95 MW	95 MW	95 MW
18	Capacity charge	\$12.0/kw-yr	\$12.3/kw-yr	\$12.6/kw-yr	\$12.9/kw-yr	\$13.2/kw-yr
19	Capacity replacement cost	\$1 M	\$1 M	\$1 M	\$1 M	\$1 M
20						
21	Total cost (line 8+14+19)	\$36 M	\$34 M	\$34 M	\$34 M	\$35 M
22						
23	Total capacity	185 MW	185 MW	185 MW	185 MW	185 MW
24	Total energy MWh	994,256	947,548	939,818	932,400	940,072
25	Cost \$/MWh (line 21 / 24)	\$36.3/MWh	\$36.1/MWh	\$36.4/MWh	\$36.7/MWh	\$37.5/MWh
26						
27	Total cost NPV (line 21)	\$143 M				
28	Cost \$/MWh (5-year average)	\$36.6/MWh				